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1. (Amended) A silicon-based film comprising a crystal phase formed on a substrate, said substrate having a surface shape represented by a function f ,

wherein the surface shape has a standard deviation of an inclination $\arctan(df/dx)$ from 15° to 55° within the range of a sampling length dx from 20 nm to 100 nm,

wherein a Raman scattering strength resulting from an amorphous component in the silicon-based film is not more than a Raman scattering strength resulting from a crystalline component in the silicon-based film, and

wherein a difference between a spacing in a direction parallel to a principal surface of the substrate and a spacing of single crystal silicon is within the range of 0.2% to 1.0% with regard to the spacing of the single crystal silicon.

2. (Unamended From Previous Version) The silicon-based film according to claim 1, comprising a crystal of a columnar structure in a thickness direction.

3. (Unamended From Previous Version) The silicon-based film according to claim 1, wherein a percentage of a diffraction strength of (220) plane due to X-ray or electron beam diffraction is 30% or more of a total diffraction strength.

4. (Unamended From Previous Version) The silicon-based film according to claim 1, which is formed by a plasma CVD method using a high frequency.

5. (Unamended From Previous Version) The silicon-based film according to claim 4, wherein the high frequency is not less than 10 MHz but no more than 10 GHz.

6. (Unamended From Previous Version) A photovoltaic element comprising a silicon-based semiconductor layer having at least one pin junction on a support, wherein at least one i-type semiconductor layer comprises the silicon-based film as set forth in any one of claims 1 to 5.

7. (Unamended From Previous Version) The photovoltaic element according to claim 6, wherein the silicon-based semiconductor layer is formed on a substrate comprising at least a first transparent conductive layer stacked on the support, and the first transparent conductive layer has the surface shape represented by the function f .

8. (Unamended From Previous Version) The photovoltaic element according to claim 6, wherein the support is a conductive support.

REMARKS

This application has been carefully reviewed in light of the Office Action dated July 26, 2002 (Paper No. 6). Claims 1 to 8 are pending, with Claim 1 being the sole independent claim. Reconsideration and further examination are respectfully requested.